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The complex-valued astigmatic cosine-Gaussian soliton solution of the nonlocal nonlinear Schrödinger equation and its transmission characteristics. (English) [Zbl 1479.78021](#)

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Summary: The complex-valued astigmatic cosine-Gaussian (CVACG) soliton solution of the nonlocal nonlinear Schrödinger equation is presented, and its transmission characteristics in the highly nonlocal nonlinear optical system are discussed. In the highly nonlocal nonlinear optical system, the transverse pattern of CVACG beams is diversified and controllable. In the transmission process, CVACG beams can form spatial solitons and breathers with the special transverse distribution. The two-dimensional transverse equivalent opposite evolution of the second-order moment beam width can be formed.

MSC:

[78A60](#) Lasers, masers, optical bistability, nonlinear optics

[35Q55](#) NLS equations (nonlinear Schrödinger equations)

[35C08](#) Soliton solutions

[35B36](#) Pattern formations in context of PDEs

Keywords:

[nonlocal nonlinear Schrödinger equation](#); [complex-valued soliton solution](#); [nonlinear transmission](#)

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